

*Atty Docket: 2003-IP-012888 (1391-48800)**Patent****Listing of the Claims:***

1. (Original) An apparatus for gravel packing an interval of a wellbore, comprising:  
a shroud adapted to be positioned in a wellbore interval around a sand screen, the shroud having a plurality of packing ports positioned along its length, and a plurality of production ports distributed over its length, and  
a removable material at least partially blocking flow through the production ports.
2. (Original) The apparatus according to Claim 1, wherein the removable material at least substantially blocks flow through the production ports.
3. (Original) The apparatus according to Claim 1, wherein the removable material is formed into a plurality of plugs matching the shape of the production ports and at least partially fills the production ports.
4. (Original) The apparatus according to Claim 1, wherein each production port is a circular hole through the shroud.
5. (Withdrawn) The apparatus according to Claim 4, wherein each production port has an interior thread.
6. (Withdrawn) The apparatus according to Claim 5, wherein the removable material is formed into a plurality of cylindrical plugs each having an external thread matching the internal thread of the production ports.

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7. (Withdrawn) The apparatus according to Claim 6, wherein said plugs are threaded into the production ports.

8. (Withdrawn) The apparatus according to Claim 5, further comprising a plurality of hollow cylindrical sleeves having an external thread matching the internal thread of the production ports, wherein the removable material is formed into a plurality of cylindrical plugs each filling one of the cylindrical sleeves.

9. (Withdrawn) The apparatus according to Claim 8, wherein said cylindrical sleeves are threaded into the production ports.

10. (Withdrawn) The apparatus according to Claim 1, wherein the removable material comprises a cylindrical sleeve carried on an inner surface of the shroud and having a plurality of openings matching the locations of the packing ports.

11. (Original) The apparatus according to Claim 1, wherein the packing ports are circular openings having inner diameters of from about one-eighth inch to about three-quarter inch.

12. (Original) The apparatus according to Claim 1, wherein the packing ports are circular openings having inner diameters of from about one-quarter inch to about one-half inch.

13. (Original) The apparatus according to Claim 1 wherein the packing ports are spaced axially along the shroud at locations spaced from about two feet to about twelve feet apart.

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14. (Original) The apparatus according to Claim 13 wherein the packing ports are spaced axially along the shroud at locations spaced from about three feet to about six feet apart.
15. (Original) The apparatus according to Claim 14, wherein a plurality of packing ports are located at each location.
16. (Original) The apparatus according to Claim 15, wherein the plurality of packing ports located at each location are radially distributed about the circumference of the shroud.
17. (Original) The apparatus according to Claim 1 wherein the production ports are circular openings having inner diameters of from about one-eighth inch to about two inches.
18. (Original) The apparatus according to Claim 17 wherein the production ports are circular openings having inner diameters of from about three-eighth inch to about three-quarter inch.
19. (Original) The apparatus according to Claim 18 wherein the plurality of production ports provide an open area through the shroud of from about five percent to about forty percent of the shroud surface area.
20. (Original) The apparatus according to Claim 19 wherein the plurality of production ports provide an open area through the shroud of from about ten percent to about twenty-five percent of the shroud surface area.

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21. (Original) The apparatus according to Claim 3, wherein one or more of the plugs includes a port allowing fluid flow through the plug.
22. (Original) The apparatus according to Claim 3, wherein one or more of the plugs includes a port sized to act as a packing port allowing flow of packing slurry through the plug.
23. (Original) The apparatus according to Claim 3, wherein one or more of the plugs includes a port sized to allow flow of packing slurry carrier fluid and to at least substantially block the flow of packing slurry aggregate through the plug.
24. (Original) The apparatus according to Claim 1, further comprising a flow limiting tube positioned in at least one of the packing ports.
25. (Original) The apparatus according to Claim 24, wherein the flow limiting tube has a length at least four times its inner diameter.
26. (Original) A method for gravel packing an interval of a wellbore, comprising:  
at least partially blocking fluid flow through a plurality of ports in a gravel packing shroud with a removable material, the plurality comprising a majority of ports but less than all ports, positioning the shroud in a well interval around a sand screen, and flowing gravel packing slurry into a medial annulus formed between the shroud and the screen.

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27. (Original) A method according to Claim 26, further comprising at least substantially blocking fluid flow through the plurality of ports in the gravel packing shroud with the removable material.

28. (Original) A method according to Claim 26, further comprising removing the removable material, thereby allowing fluid flow through the plurality of ports.

29. (Original) A method according to Claim 28, further comprising producing fluids from the well interval by allowing produced fluids to flow through the plurality of ports.

30. (Original) A method according to Claim 26, further comprising forming the removable material into a plurality of plugs matching the shape of the plurality of ports.

31. (Original) A method according to Claim 30, further comprising inserting a plug in each of the plurality of ports.

32. (Original) The apparatus according to Claim 30, further comprising forming a port in one or more of the plugs allowing fluid flow through the plug.

33. (Original) The apparatus according to Claim 30, further comprising forming a port in one or more of the plugs sized to act as a packing port allowing flow of packing slurry through the plug.

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34. (Original) The apparatus according to Claim 30, further comprising forming a port in one or more of the plugs sized to allow flow of packing slurry carrier fluid and to at least substantially block the flow of packing slurry aggregate through the plug.

35. (Currently Amended) A method according to Claim ~~26~~ 30, further comprising forming a profile on the outer surface of each plug, the profile adapted to mechanically engage the plurality of ports.

36. (Withdrawn) A method according to Claim 26, further comprising forming a thread on an inner surface of each of the plurality of ports.

37. (Withdrawn) A method according to Claim 36, further comprising forming the removable material into a plurality of plugs and forming a thread on the outer surface of the plugs.

38. (Withdrawn) A method according to Claim 37, further comprising threading one of the plugs in each of plurality of ports.

39. (Withdrawn) A method according to Claim 36, further comprising forming a thread on a metal sleeve adapted to be threaded into the plurality of ports and filling the sleeve with the removable material.

40. (Original) A method according to Claim 28 wherein the removable material dissolves on contact with well fluids.

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41. (Original) A method according to Claim 40, wherein the removable material is polylactic acid and the material is removed by contacting the material with water in the well.
42. (Original) A method according to Claim 40, wherein the removable material comprises an oil soluble resin and the material is removed by contacting the material with oil produced in the well.
43. (Original) A method according to Claim 40, wherein the removable material comprises an oil well treatment chemical and the material is removed by contacting the material with fluids in the well.
44. (Original) A method according to Claim 40, wherein the removable material comprises scale inhibitor, further comprising treating the well by allowing the scale inhibitor to dissolve in the well fluids.
45. (Original) A method according to Claim 27 wherein the removable material dissolves on contact with an acid, further comprising injecting acid into the well interval.
46. (Original) A method according to Claim 45 wherein the removable material is selected from one of zinc, aluminum, and magnesium and alloys of zinc, aluminum, and magnesium.
47. (Original) A method according to Claim 46, further comprising injecting hydrochloric acid into the well interval.

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48. (Original) A method according to Claim 45 wherein the removable material is a mixture of magnesium oxide and magnesium chloride.

49. (Original) A method according to Claim 48, further comprising injecting hydrochloric acid and/or sulfamic acid into the well interval.

50. (Original) A method according to Claim 26, further comprising inserting a flow limiting tube in each port not blocked with the removable material.

51. (Original) A method according to Claim 50 wherein the flow limiting tube has a length at least four times its inner diameter.

52. (Original) An apparatus for gravel packing an interval of a wellbore, comprising:  
a shroud adapted to be positioned in a wellbore interval around a sand screen, the shroud having a plurality of packing ports positioned along its length, and a plurality of production ports distributed over its length, and  
a removable material blocking flow through the production ports.



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53. (Original) A method for gravel packing an interval of a wellbore, comprising:  
blocking fluid flow through a plurality of ports in a gravel packing shroud with a removable material, the plurality comprising a majority of ports but less than all ports,  
positioning the shroud in a well interval around a sand screen, and  
flowing gravel packing slurry into a medial annulus formed between the shroud and the screen.
54. (New) The apparatus according to claim 4, further comprising a plurality of hollow cylindrical sleeves having an external diameter selected to fit in a production port, wherein the removable material is formed into a plurality of cylindrical plugs each filling one of the cylindrical sleeves.
55. (New) The apparatus of claim 54, wherein the cylindrical sleeves are press fit into the production ports.
56. (New) A method according to claim 30 wherein the plugs each comprise a metal sleeve having an outer surface matching the shape of the plurality of ports, further comprising filling the sleeve with the removable material.
57. (New) A method according to claim 56, further comprising pressing the metal sleeves in the production ports.